



C14-EE-306

4248

BOARD DIPLOMA EXAMINATION, (C-14)
OCT/NOV—2018
DEEE—THIRD SEMESTER EXAMINATION
GENERAL MECHANICAL ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Mention three elastic constants and write the relation among three elastic constants.
2. A rod of 20 mm diameter and 600 mm long is subjected to an axial pull of 40 kN. Young's modulus is 20×10^5 N/mm². Determine the elongation of the rod.
3. State the functions of the shaft.
4. Write the torsion equation and mention the terms involved in it.
5. Write any three differences between four-stroke engine and two-stroke engine.
6. How do you classify the IC engines?

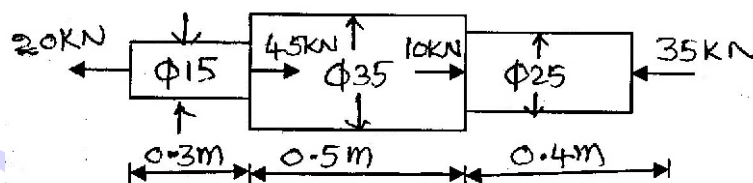
- * 7. What is the difference between fire tube boilers and water tube boilers?
8. How do you classify the steam turbines?
9. What is the function of pump? Mention different types of pump.
10. Mention different properties of lubricants.

PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.
 (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. A bar of varying cross-section is subjected to axial loads as shown in the figure below :



Find the stresses in each section. Diameters are in mm.

- * 12. A mild steel bar of uniform cross-section has diameter of 40 mm and is 50 m long. A tensile load of 70 kN is applied longitudinally. Young's modulus is $2 \times 10^5 \text{ N/mm}^2$ and Poisson's ratio is 0.3. Calculate the elongation of the bar and change in diameter.

13. Find the diameter of solid shaft required to transmit 110 kW power at 240 RPM. The allowable shear stress is not to exceed 70 N/mm^2 and twist is not to exceed 1° in a length of 3 m. The modulus of rigidity is $0.8 \times 10^5 \text{ N/mm}^2$.

- * 14. Explain the working of four-stroke diesel engine with the help of neat sketch.
15. Write the differences between diesel (CI) engine and petrol (SI) engine.
16. Describe the working of Benson boiler with the help of neat sketch.
17. Explain the principle of Parson's reaction turbine with the help of neat sketch.
18. Draw the sketch of centrifugal pump indicating various components and hydraulic heads. Also mention the function of each component.
